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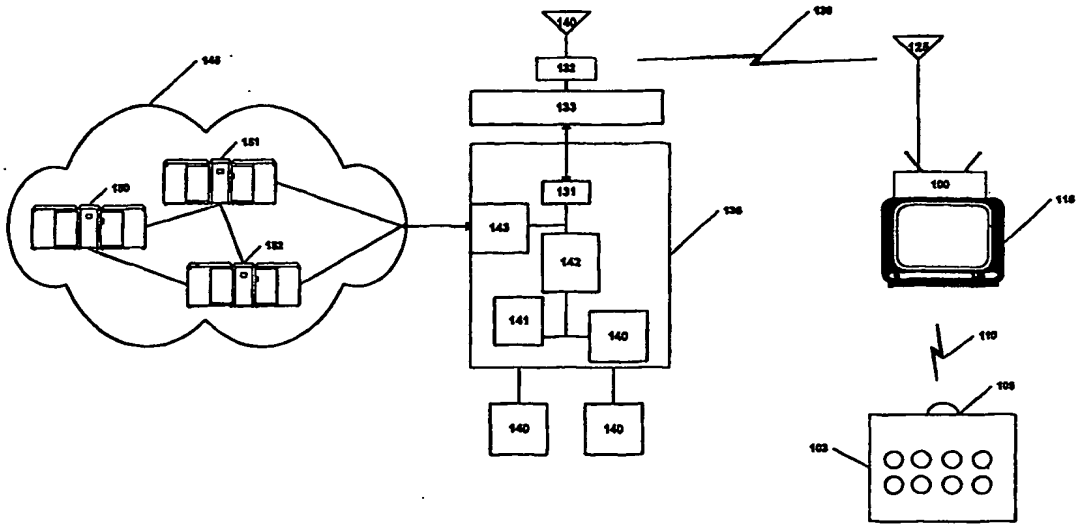

(57) Abstract

A set top box is provided that interfaces a television and a personal computer that is connected to the Internet. The set top box includes a wireless remote control receiver that receives user commands from a wireless remote control unit. A radio frequency transceiver that transmits computer commands to the personal computer that is connected to the Internet in response to the user commands and that receives data that is generated from the Internet via the personal computer in response to the computer commands. A video processing system that processes the received data for display on a television and a television interface that displays the processed received data on the television.

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Methods and Systems for Providing Television Related Services Via a Networked Personal Computer

Field of the Invention

The present invention relates to the field of television and more particularly to set top boxes for televisions.

Background of the Invention

The television (TV) has become ubiquitous in modern society. As a result, a variety of services are being provided via TV. Many of the services are provided using a set top box that works in conjunction with the TV to provide the desired service. One example of a service provided via a TV is an online TV program guide, wherein TV program schedule information is displayed on a TV for searching and selection by a viewer. Online TV program guides are described in U.S. Patent 4,751,578 to Reiter et. al. Entitled " *System for Electronically Controllable*

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Viewing on a Television Updateable Television Programming Information" . Other popular services are also provided using a set top box. For example cable or satellite TV may be provided using a tuner packaged as a set top box. The tuner decodes the transmission from the service provider and formats the signal for display on the TV.

Personal computers (PCs) have also been widely accepted into consumer's homes for a wide range of uses. A popular use is access to the Internet, and the World Wide Web (the Web). The Web is an arrangement of uniform resource locators (URLs) on the Internet that, taken together, may provide a communications infrastructure for making services and products available to PC users.

Some of the services available over the Internet are provided using set top boxes. One example of such a service is WebTV. WebTV enables a user to browse the Web using a TV as the display. WebTV, however, duplicates much of the hardware and software included in a standard PC. For example, WebTV includes a modem while many PCs come equipped with one. Consequently, the consumer who already owns a PC may pay the cost of the modem twice: once when buying the PC and a second time when buying WebTV. Furthermore, WebTV may also duplicate a portion of the functions found in most TVs. This duplication of PC and TV components may make WebTV unnecessarily expensive or complex to the many consumers who already own a PC.

Information on the Internet may appear distorted when viewed on a TV. Information stored on the Internet may be formatted according to the aspect ratio of a computer display. A TV display, however, may not have the same aspect ratio as a computer display.

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Consequently, information from the Internet may appear distorted when viewed on a TV.

Summary of the Invention

The present invention provides systems and methods which use a PC to access desired information while watching television. The information may be stored locally to the PC or on a network (*e.g*, the Internet). Lower cost may be achieved by utilizing a PC to access the information, thereby eliminating the duplication of hardware in the set top box.

A Set top box according to the present invention includes a remote control receiver that receives user commands from a wireless remote control unit. A radio frequency transceiver that transmits computer commands to the personal computer that may be connected to the Internet in response to the user commands and that receives data that is retrieved by the PC in response to the computer commands. A video processing system that processes the received data for display on a television and a television interface that displays the processed received data on the television.

Systems utilizing the present invention may be inexpensive compared to existing systems that duplicate hardware and software components found in many PCs and TVs. The present invention may use an existing PC to avoid replication, thereby allowing a reduction in the cost of the system. Moreover, the PC may be connected to the internet, avoiding further duplication and enabling access to networked resources. For example, the present invention may be utilized to access to the Internet so as

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to obtain information relevant to a specific television program currently being viewed or information independent of any particular program such as access to a chat-room.

Additionally, the television may be interfaced to the PC and the Internet by wirelessly receiving user commands at a set top box and then wirelessly relaying computer commands that represent the user commands from the set top box to a personal computer in response to the wirelessly received user commands. The computer commands cause the personal computer to access the Internet in response to the computer commands and receive data from the Internet at the personal computer. The information is then wirelessly relayed from the personal computer to the set top box where the information is formatted for display on a television that is connected to the set top box. The wireless connection may therefore avoid a physical connection between the PC and the television. Furthermore, the wireless connection may allow the existing PC and the television to be located in separate areas of the user's home. For example, the wireless connection may allow the PC and the televsion to be located in different rooms or on different floors of the user's home.

The present invention may also be utilized to provide information likely to be desired while the viewer watches television. For example, the viewer may desire a listing of television programs and corresponding broadcast times, sports or weather information.

The present invention may also display information from the Internet along with television images on a television display. For example, the user may select a mode wherein a portion of the TV display is allocated to

displaying TV images while another portion may be used for interactive services (*e.g.*, E-mail or chat-room participation). The information from the Internet accessed by the user may be formatted in accord with the aspect ratio of the TV display so as to avoid the negative visual artifacts associated with the display of Internet information on a TV display.

Accordingly, an existing PC may be used in conjunction with the set top box to supply many of the functions that may be desired by a user while watching TV. Moreover, the set top box may use the PC in conjunction with the Internet to supply the desired functions rather than duplicating the functionality of the PC within the set top box. The user may access the information from a specific location on the Internet which is associated with the desired functions. For example, the user may desire program listings, sports scores, weather information, access to e-mail, or participation in a chat room that may concern a TV program presently being viewed by multiple users. By avoiding duplication of the PC functionality within the set top box, the present invention may provide a lower cost alternative to users who desire the above functions and already have a PC.

Brief Description of the Drawings

Figure 1A is a block diagram of a system utilizing the present invention;

Figure 1B is an illustration of a wireless remote control of **Figure 1A**;

Figure 1C is an illustration of a TV display corresponding to a particular user command;

Figure 2 is a block diagram of an embodiment of the present invention;

Figure 3 is a flow chart illustrating an embodiment of the present invention;

Figures 4A, 4C, 4D, and **4E** are flow charts illustrating a command protocol that may be utilized by the present invention;

Figure 4B is a block diagram of a packet format utilized by the present invention;

Figure 5 is a table of exemplary instructions and commands used in an embodiment of the present invention; and

Figures 6 through 32 are examples of displays that may be used in a system utilizing the present invention.

Detailed Description of the Invention

The present invention will now be described more fully hereinafter with reference to the accompanying drawings, in which a preferred embodiment of the invention is show. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. Like numbers refer to like elements throughout.

As will be appreciated by one of skill in the art, the present invention may be embodied as a method, data processing system or program product. Accordingly, the

present invention may take the form of an entirely hardware embodiment, an entirely software embodiment or an embodiment combining software and hardware aspects. Furthermore, the present invention may take the form of a computer program product on a computer-readable storage medium having computer-readable program code means embodied in the medium. Any suitable computer readable medium may be utilized including hard disks, CD-ROMs, optical storage devices, or magnetic storage devices.

The present invention is also described using flowcharts. Those skilled in the art will understand that each block of the flowchart illustrations, and combinations of blocks in the flowchart illustrations, may be implemented with various commonly used communication system components. It will also be understood that portions of the operations described in the flowchart illustrations may be executed as computer program instructions loaded into a computer or other data processing apparatus, thus producing a machine which provides means for implementing the functions specified in the flowchart blocks and combinations thereof. The computer program may cause operational steps to be performed on the computer or data processing apparatus to produce a computer-implemented process such that the instructions which execute on the computer or data processing apparatus provide steps for implementing the functions of the flowchart blocks or combinations thereof. Accordingly, blocks of the flowchart illustrations support combinations of means for performing the specified functions and combinations of steps for performing the specified functions.

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By utilizing the present invention, an existing PC may be used in conjunction with the set top box to supply many of the functions that may be desired by a user while watching TV. Moreover, the set top box may use the PC in conjunction with the Internet to supply the desired functions rather than duplicating the functionality of the PC within the set top box. The user may access the information from a specific location on the Internet which is associated with the desired functions. For example, the user may desire program listings, sports scores, weather information, access to e-mail, or participation in a chat room that may concern a TV program presently being viewed by multiple users. By avoiding duplication of the PC functionality within the set top box, the present invention may provide a lower cost alternative to users who desire the above functions and already have a PC.

Figure 1A illustrates a system utilizing the present invention. A user may control the system with a wireless remote control **103**. The wireless remote control **103** wirelessly transmits user commands to the system so as to control the display of information on a TV. The user commands are transmitted to the system by pushing corresponding buttons on the wireless remote control **103**. A set top box **100** receives the user commands and determines if external information is required to execute the user command. If external data is required, a computer command is wirelessly relayed to a radio frequency transceiver **133** radio frequency transceiver **133** across a communications link **130**. The received computer command is then transmitted to a PC **135**. The PC **135** determines if data is required from a network **145** or if

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data may be obtained locally. If data is desired from the network **145**, the data is returned to the PC **135** and the corresponding information is then wirelessly relayed, with any desired command, to the set top box **100** across the communications link **130** using the command protocol. If data may be obtained locally, the PC **135** transmits the corresponding information to the radio frequency transceiver **133** which wirelessly relays the corresponding information, with any desired command, across the communications link **130** to the set top box **100** using the command protocol. The set top box **100** then formats the information and command for display on the TV **115**. For example, the returned information and command may describe a box that is to be drawn on the TV **115** while the data describes what the box drawn should contain.

Referring to **Figure 1B**, the wireless remote control **103** is capable of controlling a range of consumer electronic devices. For example, the wireless remote control **103** may be used to control a TV, a Video Cassette Recorder (VCR), and a cable tuner box. The wireless remote control **103** transmits commands over the communications link **110** to the wireless remote receiver **105**. In the preferred embodiment, the communications link **110** uses infra-red light. Although the wireless remote control **103** is described in a handheld form, other devices may be used as the wireless remote control **103**. For example, a keyboard with an infra-red interface may be substituted for the wireless remote **103** control described above.

The wireless remote control **103** includes a plurality of keys which may be designated as having an associated user command or data. When the user pushes a key, the

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associated user command or data is wirelessly transmitted to the set top box **100** across the communications link **110**. A subset of the keys on the wireless remote control **103** may be designated as having a user command or data associated with it that is chosen specifically for the purpose of practicing the present invention. For example, **Figure 1B** illustrates a guide button corresponding to a particular command which causes the screen shown in **Figure 1C** to be displayed on the TV **115**. **Figure 1B** also shows a setup button for , a menu button for displaying the top level menu, a set of directional button for navigating through the displays, an exit button for exiting the menu, and three " soft keys" for performing functions that may vary depending on the present state of the display. For example, if the guide button were pressed while displaying the menu shown in **Figure 1C**, F1 may correspond to the CURRENT button, F2 may correspond to the FAVORITES button and F3 may correspond to the OPTIONS button (*i.e.*, Press F1 for CURRENT, press F2 for FAVORITES and Press F3 for OPTIONS).

The set top box **100** receives the user commands from the wireless remote control **103** via the communications link **110**. The set top box **100** controls the display of information on the TV **115** in response to the user commands. When the user selects particular information for display on the TV **115**, the set top box **100** formats the TV **115** display so that the information is displayed according to the user command. For example, **Figure 1C** illustrates an exemplary display of information in response to a user command corresponding to a TV program guide describing broadcast times for programs. Although

Figure 1C shows a full screen display of information, other modes may be used. For example, a partial display mode may also be used wherein the information described above appears on a first portion of the display while a second portion of the TV **115** is used to display other information (*e.g.*, video from a TV program).

The set top box **100** displays the information described above by relaying computer commands and receiving corresponding information with an antenna **125** according to the command protocol described herein. The user commands received from the wireless remote control **103** are processed by the set top box **100** to determine what action is necessary to display the desired information. If the set top box **100** requires information not available within set top box **100**, the set top box **100** wirelessly relays a corresponding computer command using the radio transceiver and an antenna **125**. Commands are relayed using the command protocol structured as packets containing instructions and data concerning the information to be displayed.

A communications link **130** is a UHF radio frequency signal which carries information between the set top box **100** and a radio frequency transceiver **133**. In the preferred embodiment, the communications link **130** operates using a carrier frequency of 900Mhz.

The radio frequency transceiver **133** receives and transmits information over the communication link **130** using a radio transceiver **132** and an antenna **140**. The operation of the radio transceiver **132** and the antenna **140** is similar to those associated with the set top box **100**. The radio frequency transceiver **133** relays the computer commands received from the set top box **100** to

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the PC **135**. The radio frequency transceiver **133** also receives information from the PC **135** for relay to the set top box **100**. The radio frequency transceiver **133** translates information between the serial data format and the radio signal format described above. The radio frequency transceiver **133** may be implemented external to the PC **135** with a dedicated power source or internally within the PC **135**.

The radio frequency transceiver **133** communicates with the PC **135** through a serial data interface **131**. The serial data interface **131** is a bi-directional communications device commonly found in a personal computer. Information received from the radio frequency transceiver **133** may be communicated to the PC **135** via the serial data interface **131**. Similarly, information may be communicated from the radio frequency transceiver **133** to the PC **135** via the serial data interface **131**.

The PC **135** is a computer capable of running a wide range of applications software and may consist of a CPU **142**, a memory **141**, a network communications device **143**, a hard disk drive **140**, a keyboard **139**, a monitor **138** and other hardware and software components commonly found in personal computers. For example, the PC **135** may be implemented using a Pentium microprocessor marketed by Intel running the Windows 95 Operating System marketed by Microsoft Inc. The PC **135** processes the computer command received from the set top box **100** and the corresponding information according to the command protocol. A computer program running on the PC **135**, receives information from the radio frequency transceiver **133** for transmission to a network **145**. The computer program also accepts data from the network **145** for relay to the set

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top box **100** through the radio frequency transceiver **133**. The computer program running on the PC **135** formats the information to be returned to the set top box **100** in accordance with command protocol.

The network **145**, including a collection of computers (*i.e.*, a computer **150**, a computer **151**, and a computer **152**), may represent the Internet. Data that is of particular interest to users of the system may be stored at particular locations on the Internet. The data on the Internet is accessed using the computer commands relayed by the set top box **100** to the PC **135**. The information is then relayed to the set top box **100** for processing or formatting for display on the TV **115**. The network **145** described above may also be a local area network, Internet 2, or similar configuration enabling the distribution and storage of data. In one embodiment, the PC **135** may used in standalone mode wherein the PC **135** does not access the network **145**.

Referring to **Figure 2**, the set top box **100** will now be described in greater detail. The set top box **100** accepts user commands from the wireless remote control **103**, wirelessly relays computer commands corresponding to the user commands to the PC **135**, receives information corresponding to the computer commands, processes and formats the corresponding information for display on the TV **115** in accordance with the user command.

The set top box **100** includes a central processing unit (CPU) or controller **221** a Random Access Memory (RAM) **222**, a Read Only Memory (ROM) **223**, a Video Processing system (VP) **218**, a Video Buffer (VRAM) **219**, a TV interface **211** including an Overlay **210**, a Converter **220**, and a Tuner/Modulator **212**, a radio Frequency Transceiver

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(RFT) **217**, an antenna **125** and a wireless infra-red (IR) sensor **214**. These individual components are well known to those having skill in the art and need not be described further herein.

The CPU **221** may be suitable for running a computer program to process information from the PC **135**, processes user commands from the wireless remote control **103**, control the formatting of information for display on the TV **115**, and provide general system services to the set top box **100**. The CPU **221** may process user commands received from the wireless remote control **103** as a stream of serial data. For example, if the user pushes a button on the wireless remote control that corresponds to a command requiring information from the network **145**, the CPU **221** receives the command in an internal serial buffer from the IR sensor **215**. The CPU **221** sends a corresponding computer command to the RFT **217** and the command is transmitted over communications link **130** to the PC **135** and the network **145**. The CPU **221** may also process information from the PC **135**. For example, when information is returned from the network **145**, it is received by the RFT **217**. The CPU **221** accepts the information from the RFT **217** as a stream of serial data. In one embodiment, the CPU **221** may processes the data received from the wireless remote control **103** and information from the PC **135** and the network **145** as a single serial data stream.

The CPU **221** may also control the combination of RGB formatted data associated with information from the PC **135**. RGB formatted data represents display information corresponding to the intensity of each color component for a particular pixel within an image. For example, the

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R component corresponds to the Red intensity of the pixel, the G corresponds to the green intensity of the pixel, and the B component corresponds to the blue intensity of the pixel. When the three components are displayed simultaneously, the pixel exhibits a color made up of the three intensity components. If the user has issued a user command requesting that TV program listings be displayed on the TV **115** simultaneously with a TV program, the CPU **221** may transmit the appropriate RGB data to the Overlay **210** for combination with the NTSC signal. The CPU **221** may be implemented using a Cold Fire CF5306 marketed by Motorola Inc., however, analogous microprocessors known to those skilled in the art may also be used.

The VP **218** may be used by the CPU **221** to control the combination of information from the PC **135** with a TV signal for display on the TV **115** or select between the two for display. The data from the VP **218** may be represented in RGB format wherein a first portion of the data represents red information, a second portion represents green information, and a third portion represents blue information. The VP **218** may be implemented with a YVG606 Video Processor manufactured by Yamaha Inc.

The Overlay **210** may be used to combine RGB data from the VP **218** with the TV signal. The TV signal may be derived from an auxiliary input **275**, a demodulated version of the external tuner input TV signal **280**, demodulated input signal **277**, provided by the Tuner/Modulator **212**. The RGB formatted data may be combined with a TV signal formatted according to the NTSC standard (*i.e.*, a signal format for display of images on

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a TV). The Overlay produces an RGB formatted composite of the RGB data from the VP **218** and the TV signal. The Overlay **210** may be implemented using a video mixer marketed by Toshiba, Inc.

The Converter **220** converts the composite RGB signal produced by the Overlay **210** to an NTSC composite signal which may be displayed on a TV monitor directly. The Converter **230** may be implemented using a RGB to NTSC converter marketed by Sony, Inc.

The Tuner/Modulator **212** selects an NTSC composite formatted signal from the Converter **220** or an external tuner input TV signal **280** and formats the selected signal as a modulated signal for input into a TV tuner. The Tuner/Modulator **212** may also provide a demodulated version of the external tuner input TV signal **280** to the Overlay **210**. The Tuner/Modulator **212** may be implemented using a tuner/modulator marketed by Panasonic, Inc.

The radio Frequency Transceiver (RFT) **217** transmits user commands from the set top box **100** to the PC **135** using a radio signal. The RFT **217** also receives information from the PC **135** for processing and formatting by the set top box **100** using a radio signal. The RFT **217** is FCC part 15 compliant and may be implemented with two RFM 9901s and an RFM 9902 manufactured by Radio Frequency MicroDevices Inc.

The wireless IR sensor **214** receives user commands from the wireless remote control **103** over communications link **110**. The wireless IR sensor **214** provides the relayed user commands from the wireless remote control **103** to the CPU **221** for processing. The user commands are processed by the CPU **221** as a serial data stream.

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Referring to **Figure 3**, overall operations of a system utilizing the present invention will now be described. The operation of the system begins when the user presses a button on the wireless remote control **103** (Block **300**). As described above, the button pushed corresponds to a user command which carries out a function desired by the user. The user command is transmitted across the communications link **110** to the wireless remote control receiver **120** (Block **305**). The relayed command is placed in a serial input buffer for service and an interrupt is generated to the CPU **221**. The CPU determines the nature of the user command and relays a corresponding computer command to the radio frequency receiver **217**, across the communication link **130** to the radio frequency transceiver **133** (Block **310**).

The radio frequency transceiver **133** transfers the relayed computer command to the PC **135** via the Serial Interface Unit **131**. If the PC **135** is connected to the Internet (Block **311**), the PC **135** accesses the Internet (Block **315**) and receives the data required by the computer command (Block **320**). If the PC **135** is not connected to the Internet (Block **311**), the required data may be retrieved locally (Block **313**). For example, information may be provided via a CD-ROM and accessed locally by the PC. Alternatively, an Internet connection may be established.

The received data is then formatted in accordance with the command protocol (Block **325**) and the PC **135** relays the information corresponding to the received data across the communication link **130** to the set top box **100** (Block **330**). The set top box processes and formats the received information for display on the TV **115** connected

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to the set top box **100** (Block **335**), completing the process (Block **340**).

Referring to **Figures 4A, 4B, 4C, 4D,** and **4E** a command protocol and the packet format used to transfer data between the set top box **100** and the PC **135** will now be described in greater detail. Information relayed between the set top box **100** and the PC **135** may be structured according to the packet format illustrated in **Figure 4B**. The packet format includes a START byte, an ID word, an INSTR byte, a LENGTH word, a number of DATA bytes, a CKSUM word, and a STOP byte. The Start byte signals the start of the packet. In a particular embodiment, the START byte is the hexadecimal value 0xFF. The ID word is the least significant word of the set top box's serial number. The INSTR byte is the instruction or command to be executed by the set top box **100**. The LENGTH word is the number of bytes contained in the DATA field. The DATA is a number of data bytes associated with the INSTR field. For example, if a particular command or instruction has associated data or parameters, the data is stored in the DATA field. The number of data bytes included in the DATA field is described by the LENGTH field. The CKSUM is the least significant word of the sum of each byte contained in the INSTR, LENGTH, and DATA fields. The STOP byte signals the end of the packet. In a particular embodiment, the STOP byte is the hexadecimal value 0xFF.

As shown in Figure **4A**, the command protocol may be separated into three blocks or modules (Block **401**, Block **402**, and Block **403**). The process begins in Block **410** when incoming data is received. The received data is identified (Block **420**) as user command data from the

wireless remote control **103** or information from the PC **135** (Block **440**), user command data is processed and transmitted to the PC **135** (Block **450**). Information from the PC **135** is processed in Block **402**. Block **401** also executes commands from the PC **135** after processing (Block **402**) and verification (**403**).

When a serial input interrupt occurs, an interrupt vector routine stores the incoming command in a receive buffer for later processing (Block **420**). Incoming information from the PC **135** is also stored in a receive buffer (Block **420**). There may be one receive buffer for each serial input (*i.e.*, the RFT **217** and wireless IR sensor **214**).

As the receive buffer is processed, a flag is set if a valid packet is received (Block **420**). The data may be a user command from the wireless IR sensor **214** input (*i.e.*, the keyboard or wireless remote control **103**), or information from the RFT **217** input from the PC **135**. If an IR input is valid (Block **440**), it is queued up, packetized, and transmitted to the PC **135** (Block **450**). A flag is set to wait for that packet to be received. If a time-out or FAIL occurs, the packet is resent. If an OKAY instruction is returned from the PC **135**, the transmitted user command was received by the PC **135** and the flag is cleared (Block **450**). **Figure 4C** illustrates a particular embodiment of processing the user command data and execution of information from the PC **135**.

If information is received from the PC **135** (Block **440**), the receive packet routine is called (Block **402**) wherein the information is shifted into a packet. A flag is set if a packet header matches. While the flag is set, the information is stored in the various sections

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for a number of bytes. Next, the CKSUM and STOP fields are read. The flag may be reset by either an error or time-out. **Figure 4D** illustrates a particular embodiment of formatting and processing described above.

The formatted and processed information is then verified (Block **403**). The checksum is calculated and compared. The STOP byte is also compared. Flags are set to show status. If an execution flag is set, the instruction is executed later (Block **430**). When the instruction is executed, an OKAY packet is sent back. A FAIL packet is sent if the header matched, but the rest of the packet was bad. **Figure 4E** illustrates a particular embodiment of the verification process described above.

Figure 5 is a list of instructions and commands that may be used in a system utilizing the present invention. The instructions and commands shown in **Figure 5** may be transmitted as information from the PC **135** to the set top box **100** so as to carry out the user commands desired by the user. The instructions and commands shown in **Figure 5** may be grouped according to the function each instruction or command provides when transmitted to the set top box. The drawing packets control what elements are drawn on the TV display. The control packets determine how the elements included in the drawing packets will be displayed. The status packets signal the status on the drawing and control packets sent from the set top box.

A particular example will now be discussed in greater detail. When the user pushes the menu button on the wireless remote control 103, the menu shown in **Figure 6** is displayed on the TV **115**. The display is

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accomplished by a series of instructions relayed to the set top box **100** that correspond to the menu button. Specifically, the PC **135** relays a SHOW_TRANSPARENT instruction followed by a BG_COLOR instruction, followed by a CLEAR_SCREEN instruction. These instructions are used to control the drawing of information on the TV **115**. A second series of instructions (*i.e.*, drawing packets) is then relayed to the set top box **100**. Specifically, a DRAW_3DBOX instruction is transmitted followed by a PAINT_BOX instruction. These instructions draw on the TV **115**. Finally, a third set of instructions is relayed to the set top box **100**. Specifically, a GO_TO_XY instruction is sent followed by a SET_FG_COLOR instruction followed by a PRINTF instruction. This series of instructions controls the information displayed in the boxes drawn on the TV **115**.

Figures 6 through **32** illustrate a set of exemplary commands and displays that may appear in a system utilizing the present invention. As described above, the system may include selecting a service, displaying and using a program guide and its various options, using an Email service to check/send Email, using a news service to browse the latest news, using a sports service to know the latest sports news, using a weather service to see the current weather and the forecast, and using a Chat service to communicate with other people over the network.

Selecting a service

1. When the MENU button on the remote/keyboard is pressed, the screen shown in **Figure 6** may be displayed:

2. The arrow buttons may then be used to highlight a choice and press ENTER.

Guide

Displaying the program Guide

1. Highlight GUIDE from the System's main menu and press ENTER or Press GUIDE button on the remote.

2. The Program Guide Screen is displayed as shown in **Figure 7**.

3. The first program in the first row of **Figure 7** is highlighted initially on the Program Guide Screen. For example, "High Incident" will be highlighted initially in the above screen.

Moving through the Program Guide

1. The arrow buttons may be used to scroll through the Program Guide (*i.e.*, press right arrow button to move right, left arrow button to move left, up arrow button to move up and down arrow button to move down).
2. As the Guide scrolls, the appropriate event is highlighted to show the current location on guide.
3. If the Guide scrolls out of the current time-span, pressing the CURRENT button will return the Guide to the present time. For example, in **Figure 7** if the Guide scrolls to the right to 12 AM, the Guide may return to 8 PM by pressing the CURRENT button.

Getting More Information on an Event :

1. To see more details on any event, scroll to that event and press Enter. For example, if "The Net" is selected and Enter is pressed, the display in **Figure 8** is shown.

2. Pressing REMIND ME will add/remove the selected event to the reminders list.

Note: See the section "Using the REMIND ME option" for more information

3. Pressing PREVIOUS will return the Guide the Program Guide Screen.

4. Pressing OTHER TIMES will display the additional times this program is ON. For example, if OTHER TIMES is pressed in **Figure 8**, the following is displayed.

5. Pressing REMIND ME will add/remove the selected event to/from the reminders list.

Note: See the section "Using the REMIND ME option" for more information.

6. Pressing PREVIOUS will return the Guide to the previous screen.

7. Pressing CLOSE will return the Guide the Program Guide Screen.

Using the REMIND ME Option

The REMIND ME feature may be used to remind the user of the programs selected, just before their starting times. To do this, First add the programs desired to a reminders list. For every event in the reminders list, the System displays a message on the TV screen 5 minutes before its starting time. If the System is used to change channels, it will automatically change channels one minute before the starting time of the events in the reminders list.

To use the REMIND ME feature from the Program Guide Screen do the following:

1. Press the GUIDE button on the remote. The Program Guide Screen is displayed as shown in **Figure 7.**

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2. Highlight the desired program by scrolling to it using arrow buttons.

3. Press the OPTIONS button. The OPTIONS menu screen is displayed as shown in **Figure 10**.

4. Select the REMIND ME Option and Press ENTER.

Note: *If the event is already in the reminders list, it is deleted from the list.*

1. Follow Steps 1 & 2 given above to select an event on the Program Guide Screen.

2. When the desired event is highlighted press Enter. A screen showing additional information on the program is displayed. For example, if "The Net" is selected from the Program Guide Screen shown in **Figure 7**, the screen shown in **Figure 8** is displayed.

3. Pressing the REMIND ME button on this screen will add the event to the reminders list.

Note:

1. *If the event is already in the reminders list, it is deleted from the list.*
2. *Events may also be added to the reminders list by pressing the REMIND ME button on any screen that pops up with a REMIND ME option while using the System.*

View Listings of Favorite Program Type

1. Press the OPTIONS button on the Program Guide Screen. The "Options Menu" screen is displayed as shown in **Figure 10**.
2. Scroll to the SELECT PROGRAM TYPE option using arrow buttons and press ENTER. The screen shown in **Figure 11** is displayed.
3. Select a program type and press ENTER. If movies/sports is selected, another screen is displayed

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allowing a category of movie/sport to be selected. For example, if sports is selected, the screen shown in **Figure 12** is displayed.

4. Choose a category and press ENTER. The appropriate events are displayed in the ascending order of date & time. For example, if you select "Football" the screen in **Figure 13** is displayed.
5. Selecting REMIND ME on this screen, adds the event currently highlighted to the reminders list and ensures prompting at the starting time of this event. If the event is already in the list, it is deleted from the list.

Searching the listings :

It is possible to use the search option of the System to search the listings for a program. To use the SEARCH feature do the following:

1. Press the GUIDE button on the remote. The Program Guide Screen shown in **Figure 7** is displayed.
2. Press the OPTIONS button on the Program Guide Screen. The "Options Menu" screen shown is **Figure 10** is displayed.
3. Scroll to the SEARCH option using the arrow buttons and press ENTER. The search screen is displayed as shown in **Figure 14.**
4. Enter a search string and press OK to see the events containing the search string. For example, if the word "Net" is entered in the search box, all the programs with the word "Net" in their title are displayed as shown in **Figure 15.**
5. It is possible to search the listings for movies by entering the actor's name. If only a part of an

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actor's name is given, then all the movies of the actors with that part in their name are reported. For example, if searching for "Tom", all movies of "Tom Hanks", "Tom Cruise", etc. would be returned.

Choosing Favorite Channels

1. Press the GUIDE button on the remote. The Program Guide Screen is displayed as shown in **Figure 7.**
2. Press the OPTIONS button on the Program Guide Screen. The "Options Menu" screen is displayed as shown in **Figure 10.**
3. Scroll to the CHOOSE FAVORITE CHANNELS option using arrow buttons and press ENTER. The screen, consisting of the channel names,. is displayed as shown in **Figure 16.**
4. Use arrow buttons to highlight a particular channel.

Note : To view more channels, move up/down using arrow buttons.

5. Press ENTER to add/remove the selected channel to/from the favorite channels list. If the channel is already in the favorites list, it is removed from it when ENTER is pressed (the check mark next to it will disappear). Otherwise, it will be added to the list (the check mark will appear next to it).
6. Press OK to accept the changes (or) CANCEL to ignore them.

View the program guide with only the favorite channels

1. Press the GUIDE button. The Program Guide Screen is displayed as shown in **Figure 7.**
2. Press the FAVORITES button on the Program Guide Screen.

3. The program guide is displayed with listings for only the users favorite channels.

Mail

The Mail feature lets the user send/receive e-mail messages.

Checking Email :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**
2. Select MAIL from the main menu screen and press ENTER. The screen shown in **Figure 17** is displayed.
3. Select CHECK MAIL and press ENTER.
4. The "Mail Inbox" is displayed with copies of the new e-mail messages and displayed as shown in **Figure 18.**
5. To view a message, use the arrow buttons to select it and press ENTER. The message is displayed as shown in **Figure 19.**
6. To Reply to (or) Forward an e-mail, go to the "Mail Inbox", select the message and press the appropriate button.

Sending an Email:

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**
2. Select MAIL from the main menu screen. The following screen is displayed as shown in **Figure 17.**
3. Select SEND MAIL option and press ENTER.
4. The screen shown in **Figure 20** is displayed allowing the user to compose an e-mail message.
5. Use "tab key" to move between the fields.

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6. After typing the message, press the SEND button to send it.
7. Press CANCEL to cancel sending the e-mail.

Setup Options :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6**.
2. Select MAIL from the main menu screen and press ENTER. The screen shown in **Figure 17** is displayed.
3. Select SETUP OPTIONS and press ENTER. The following screen shown in **Figure 21** is displayed.
4. Enter the appropriate information. If the user has a direct connection, the Dial-Up Information may not be necessary.
5. Press OK to accept the changes.
6. Press CANCEL to ignore the changes.

News

Reading News :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6**.
2. Select NEWS from the main menu screen and press ENTER. The screen shown in **Figure 22** is displayed
3. To view a news item, scroll to it using arrow buttons and press ENTER.
4. To e-mail a news item, select the news item and press the MAIL button.

Setting News Options :

The News feature consists of different news categories. The user may customize the news service by

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going into the news options and selecting/deselecting various categories. The follow instructions set the news options:

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6**.
2. Select NEWS and press ENTER. The screen shown in **Figure 22** is displayed.
3. Press the SETUP OPTIONS Button. The screen shown in **Figure 23** is displayed :
4. Use arrow buttons to scroll to a category and highlight it.
5. Press ENTER to Select/Deselect it. If the category is already selected, it is deselected when pressing ENTER (the check mark next to it will disappear). Otherwise, it will be selected (the check mark will appear next to it).
6. Press OK to accept the changes (or) CANCEL to ignore them.

Sports

Reading Sports :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6**.
2. Select SPORTS from the main menu screen and press ENTER. The screen shown in **Figure 24** is displayed
3. To view a sports item, scroll to it using arrow buttons and press ENTER.
4. To e-mail a sports item, select it and press the MAIL button.

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Setting Sports Options :

The Sports feature provides news on various sports. The user may customize the sports news service by going into the sports options and selecting/deselecting various sports. Follow the instructions below to set the news options:

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**
2. Select SPORTS from the main menu screen and press ENTER. The screen shown in **Figure 24** is displayed.
3. Press the SETUP OPTIONS button. The screen shown in **Figure 25** is displayed.
4. Use arrow buttons to scroll to a sports category and highlight it.

Note : To view more sports, scroll up/down using arrow buttons.

5. Press ENTER to Select/Deselect it. If the category is already selected, it is deselected when pressing ENTER (the check mark next to it will disappear). Otherwise, it will be selected (the check mark will appear next to it).
6. Press OK to accept the changes (or) CANCEL to ignore them.

Weather

Setting Weather Options :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**
2. Select WEATHER from the main menu screen and press ENTER. The screen shown in **Figure 26** is displayed.

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3. Select SETUP OPTIONS and press ENTER. The screen showing a list of various cities is displayed as shown in **Figure 27.**
4. Use arrow buttons to scroll to a city and highlight it.

Note : To view more cities, scroll up/down using arrow buttons.

5. Press ENTER to Select/Deselect a city. If the city is already selected, it is deselected when pressing ENTER (the check mark next to it will disappear). Otherwise, it will be selected (the check mark will appear next to it).
6. Press OK to accept the changes (or) CANCEL to ignore them.

Checking Current Weather :

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**
2. Select WEATHER from the main menu screen and press ENTER. The screen shown in **Figure 26** is displayed.
3. Select CURRENT WEATHER and press ENTER. The current weather is displayed for the city chosen as shown in **Figure 28.**
4. To view more cities, scroll up/down using arrow buttons.
5. Press SHOW MAP to see a U.S. weather map.
6. Press FORECAST to see the weather forecast of the city currently highlighted.

Checking the Forecast:

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6.**

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2. Select WEATHER from the main menu screen and press ENTER. The screen shown in **Figure 26** is displayed.
3. Select FORECAST and press ENTER. The weather forecast is displayed for the first city chosen as shown in **Figure 29**.
4. Press NEXT CITY to see the forecast for the next city in the selected cities list.

Chat

The chat feature allows the user to communicate with different people over the Internet while watching TV.

1. Press the MENU button on the remote/keyboard. The main menu screen is displayed as shown in **Figure 6**.
2. Select CHAT on the main menu screen and press ENTER. The screen shown in **Figure 30** is displayed.
3. Enter the user's nickname and press OK. If the nickname chosen is already being used by another user, the user will be prompted to choose another nickname
4. If the nickname is valid, the user will see a list of channels each consisting of various chat rooms displayed as shown in **Figure 31**.
5. Use arrow buttons to select a channel. The chat rooms related to that channel will appear on the right section.
6. Use tab key to shift between channel names and chat rooms.
7. Scroll to a favorite chat room using arrow buttons and click on JOIN. The user will see the ongoing discussion on your screen. The user may type a message in the box below the discussion area as shown in **Figure 32**.
8. To exit, press EXIT button.

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In the drawings and specification, there have been disclosed typical preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being set forth in the following claims.

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That Which is Claimed:

1. A set top box that interfaces a television and a personal computer that is connected to the Internet, the set top box comprising:

a wireless remote control receiver that receives user commands from a wireless remote control unit;

a radio frequency transceiver that transmits computer commands to the personal computer that is connected to the Internet in response to the user commands and that receives data that is generated from the internet via the personal computer in response to the computer commands;

a video processing system that processes the received data for display on a television; and

a television interface that displays the processed received data on the television.

2. A set top box according to Claim 1 wherein the television interface simultaneously displays the processed received data and a television program on the television.

3. A set top box according to Claim 2 wherein the television interface overlays the processed received data on a television program.

4. A set top box according to Claim 1 wherein the wireless remote control receiver is an infrared remote control receiver.

5. A set top box according to Claim 1 in combination with a personal computer that is connected to the Internet, the personal computer including a second radio frequency transceiver that receives the computer commands from the radio frequency transceiver and that transmits the data that is generated from the Internet to the radio frequency transceiver.

6. A set top box according to Claim 1 in combination with a television that is connected to the television interface.

7. A set top box according to Claim 1 in combination with a wireless remote control unit that wirelessly relays user commands to a television and to the set top box.

8. A set top box according to Claim 7 wherein the wireless remote control unit is a wireless computer keyboard.

9. A television set top box comprising:

an infrared receiver;

a radio frequency transceiver;

a controller that processes signals from the infrared receiver and the radio frequency transmitter;

a video buffer, responsive to the controller to generate RGB video data;

an RGB overlay unit that combines the RGB video data and a television signal to produce a combined RGB signal;

an converter that converts the combined RGB signal into a combined television signal; and

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a television modulator that modulates the combined television signal for display on a television.

10. A set top box according to Claim 9 wherein the RGB overlay unit combines the RGB video data and the television signal to produce a combined RGB signal that displays the RGB video data on a first portion of a television and that displays the television signal on a second portion of the television.

11. A set top box according to Claim 10 wherein the television signal is an NTSC television signal.

12. A method for interfacing a television to the Internet comprising the steps of:

wirelessly receiving user commands at a set top box;

wirelessly relaying computer commands that represent the user commands from the set top box to a personal computer in response to the wirelessly received user commands;

causing the personal computer to access the Internet in response to the computer commands;

receiving data from the Internet at the personal computer;

wirelessly relaying information representing the received data from the personal computer to the set top box; and

formatting the information for display on a television that is connected to the set top box.

13. A method according to Claim 12:

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wherein the step of causing the computer to access the Internet comprises the step of causing the personal computer to access a location which is associated with the set top box; and

wherein the step of receiving data from the Internet comprises the step of receiving data from the location that is associated with the set top box.

14. A method according to Claim 13 wherein the receiving step comprises the step of receiving television program guide data from the location which is associated with the set top box.

15. A method according to Claim 13 wherein the receiving step comprises the step of receiving sports scores from the location that is associated with the set top box.

16. A method according to Claim 13 wherein the receiving step comprises the step of receiving data that is formatted for display on a television rather than a computer monitor, from the location which is associated with the set top box.

17. A method according to Claim 12 wherein the step of wirelessly relaying information representing the received data from the personal computer to the set top box comprises the step of wirelessly relaying drawing commands from the personal computer to the set top box.

18. A method according to Claim 17 wherein the formatting step comprises the step of converting the

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drawing commands into a video signal for display on a television.

19. A method according to Claim 12, wherein said step of wirelessly relaying information representing the received data from the personal computer to the set top box comprises the steps of:

wirelessly relaying a control packet from the personal computer to the set top box so as to format the display of a drawing packet;

wirelessly relaying a drawing packet from the personal computer to the set top box so as to draw on the TV display; and

wirelessly relaying a status packet from the set top box to the personal computer so as to report on the status of the drawing packet.

20. A method according to Claim 18 wherein the converting step is followed by the step of combining the video signal with a television program signal to produce a combined video signal for display on a television.

21. A system that interfaces a television and a personal computer that is connected to the Internet, the system comprising:

a wireless remote control unit that wirelessly transmits user commands;

a set top box comprising:

a wireless remote control receiver that receives the user commands from the wireless remote control unit;

a first radio frequency transceiver that transmits computer commands to the personal computer that is

connected to the internet in response to the user commands and that receives data that is generated from the internet via the personal computer in response to the computer commands;

a video processing system that processes the received data for display on a television; and

a television interface that displays the processed received data on the television;

a second radio frequency transceiver for connection to the personal computer to receive the computer commands from the first radio frequency transceiver and to transmit the data that is generated from the internet ; and

a computer program for execution in the personal computer, the computer program comprising computer readable instructions that direct the computer to obtain the data from the Internet in response to the computer commands.

22. The system according to Claim 21, wherein the television interface simultaneously displays the processed received data and a television program on the television.

23. The system according to Claim 21, wherein the television interface overlays the processed received data on a television program.

24. The system according to Claim 21 wherein the wireless remote control receiver is an infrared remote control receiver.

25. The system according to Claim 21 wherein the set top box in combination with a personal computer that is connected to the Internet, the personal computer including a second radio frequency transceiver that receives the computer commands from the radio frequency transceiver and that transmits the data that is generated from the Internet to the radio frequency transceiver.

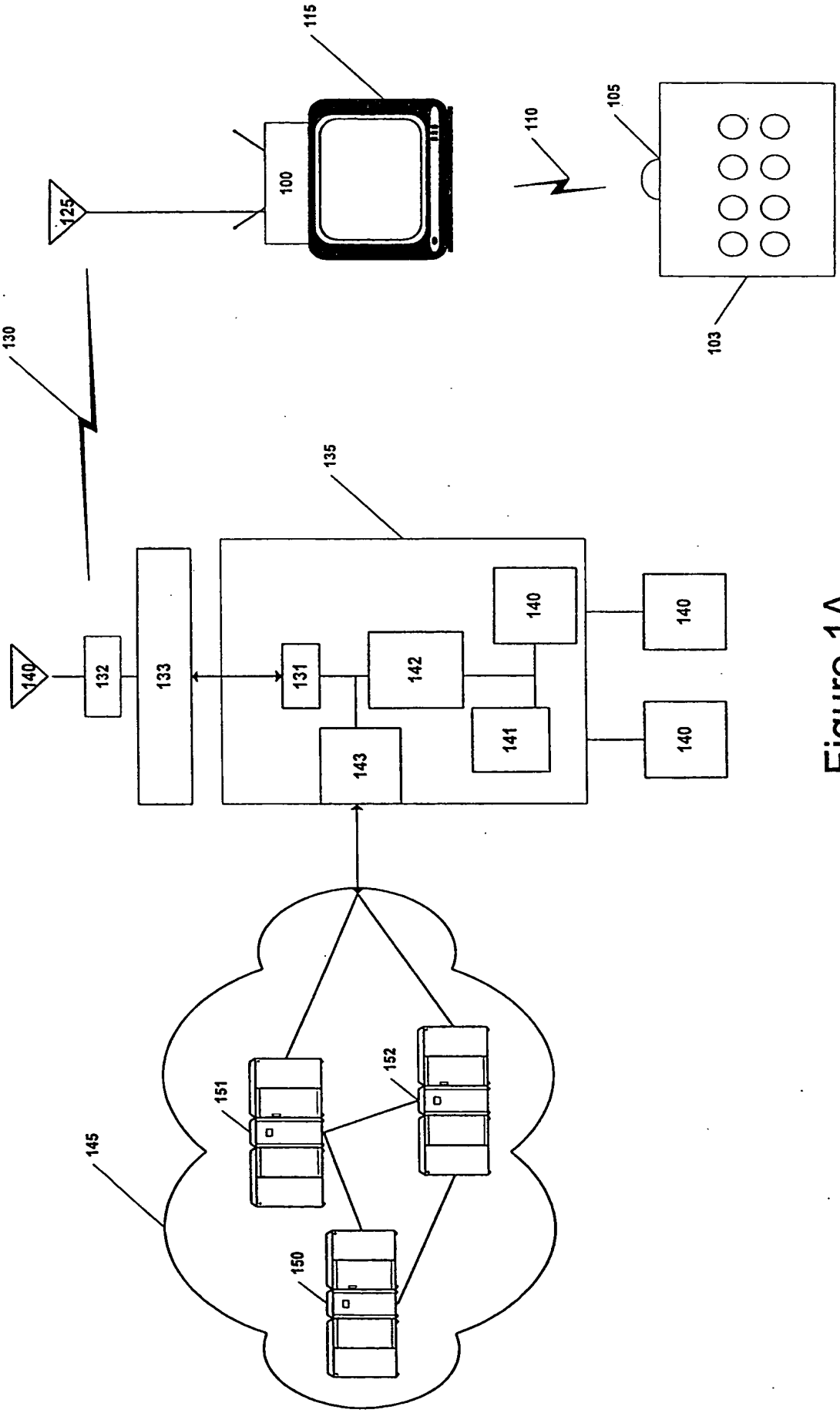

Figure 1A

BNSDOCID: <WO___9935831A1_I_>

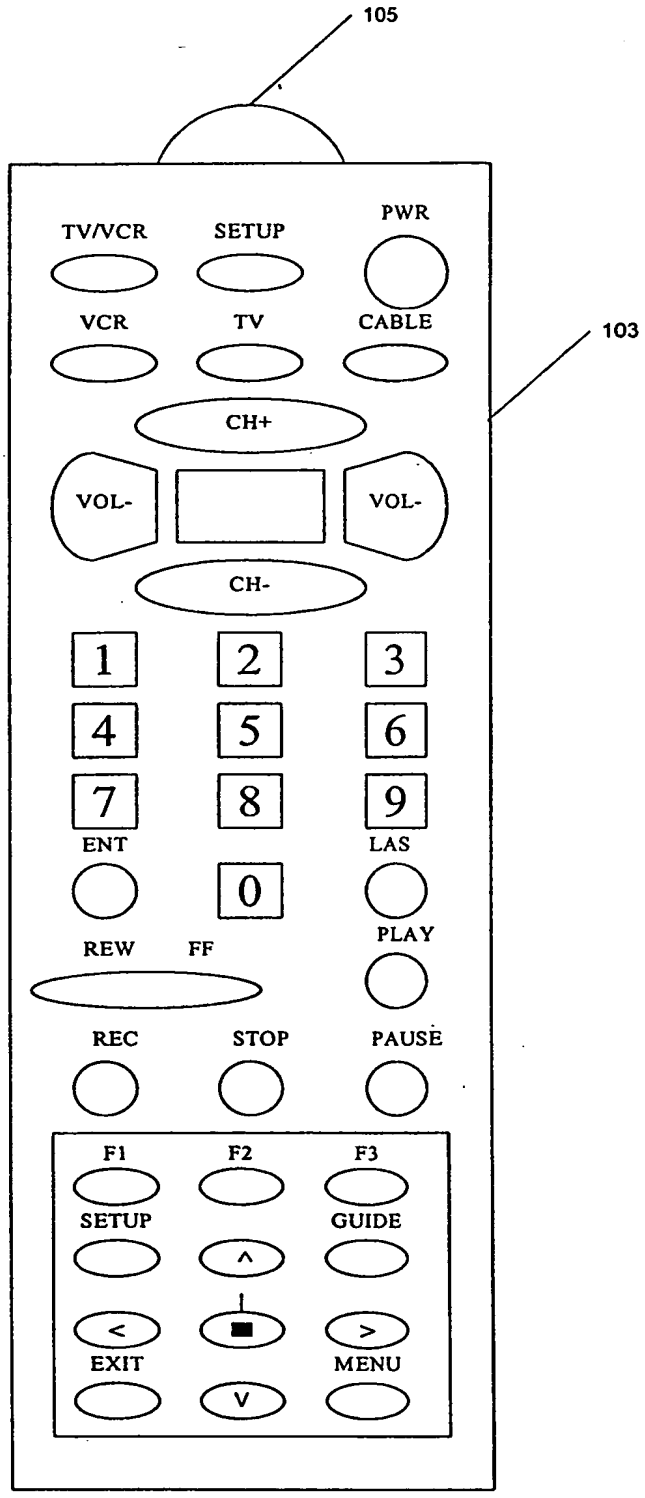

Figure 1B

BNSDOCID: <WO___9935831A1_I_>

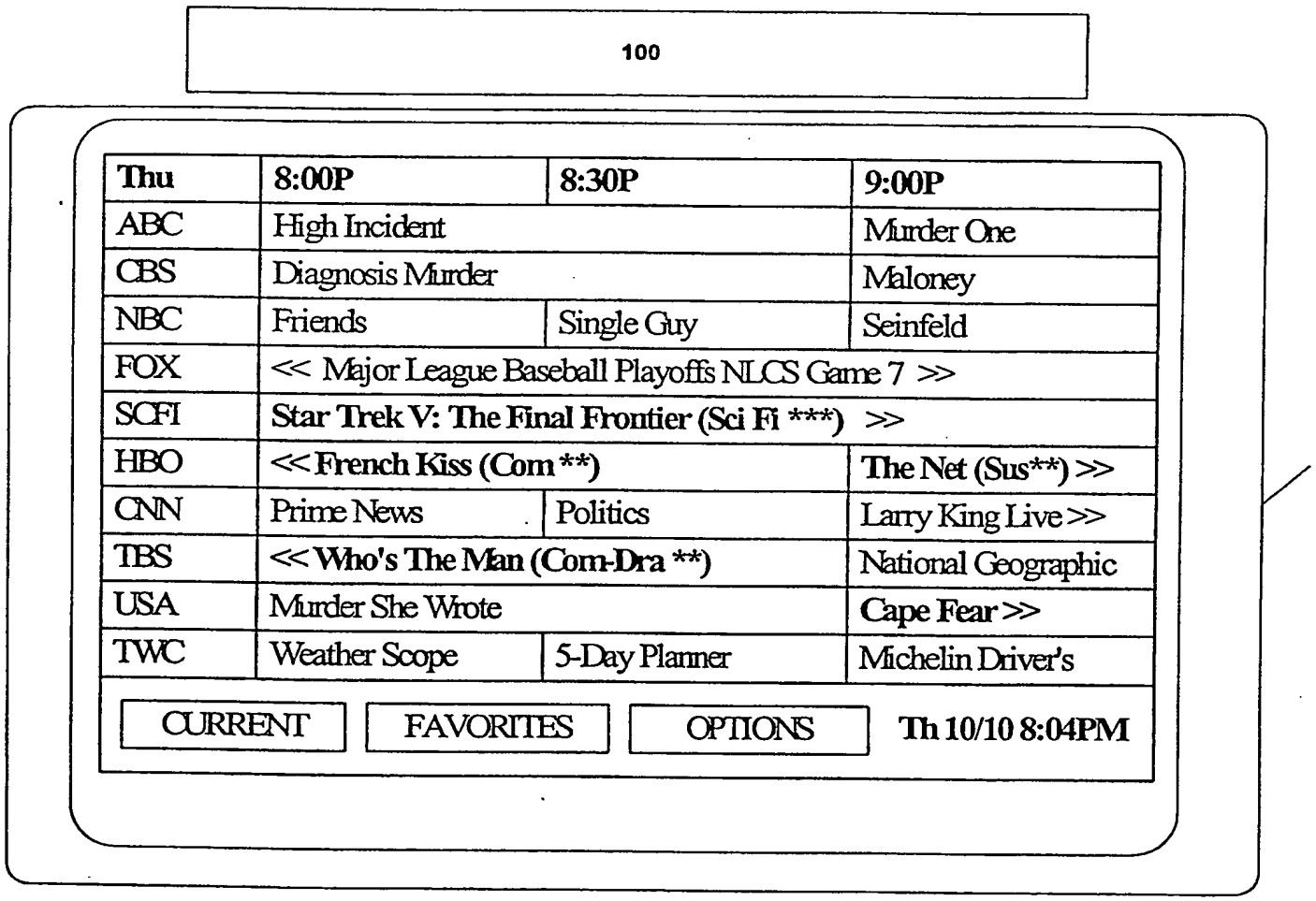

Figure 1C

BNSDOCID: <WO___9935831A1_I_>

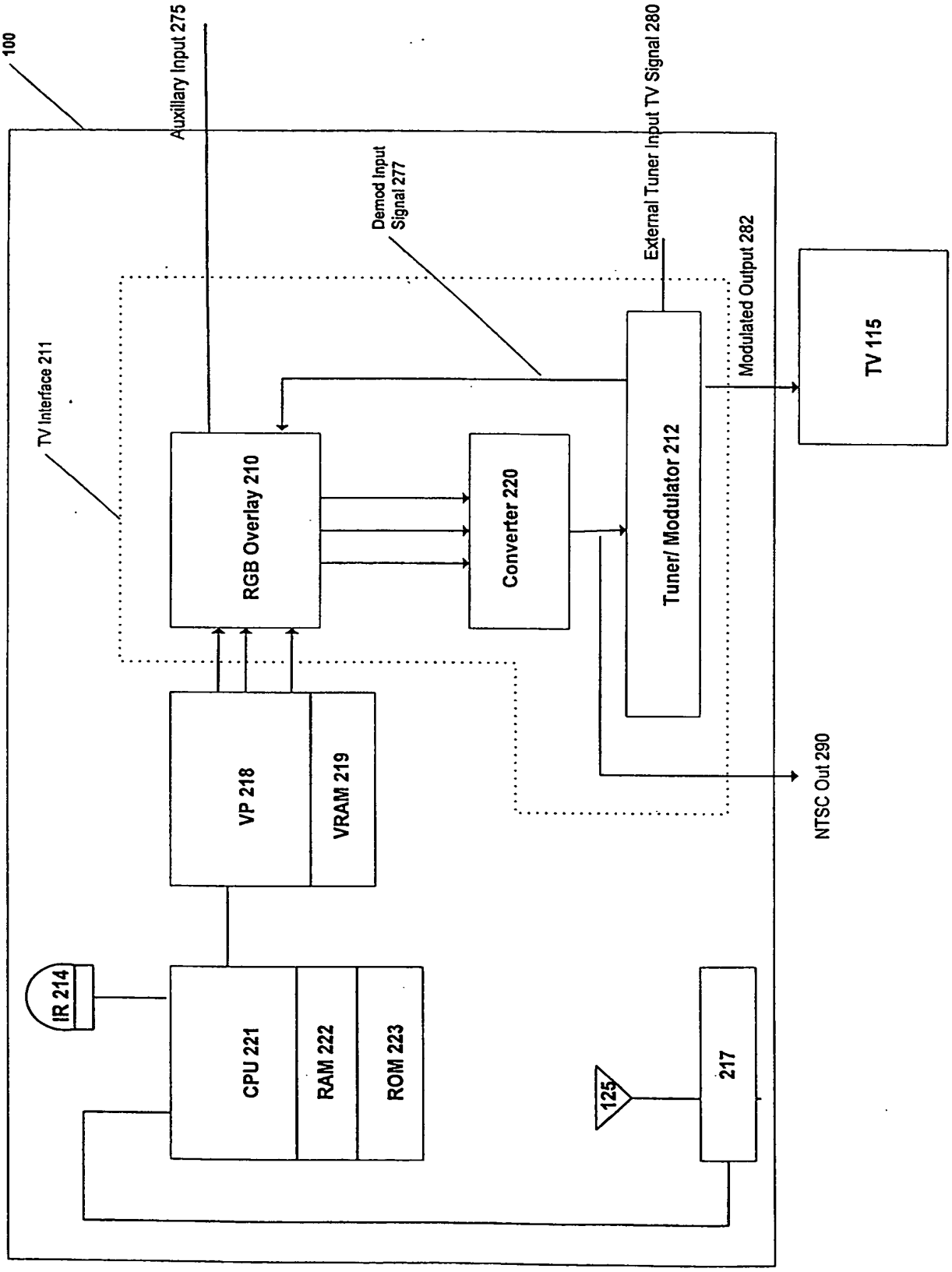

Figure 2

BNSDOCID: <WO___9935831A1_I_>

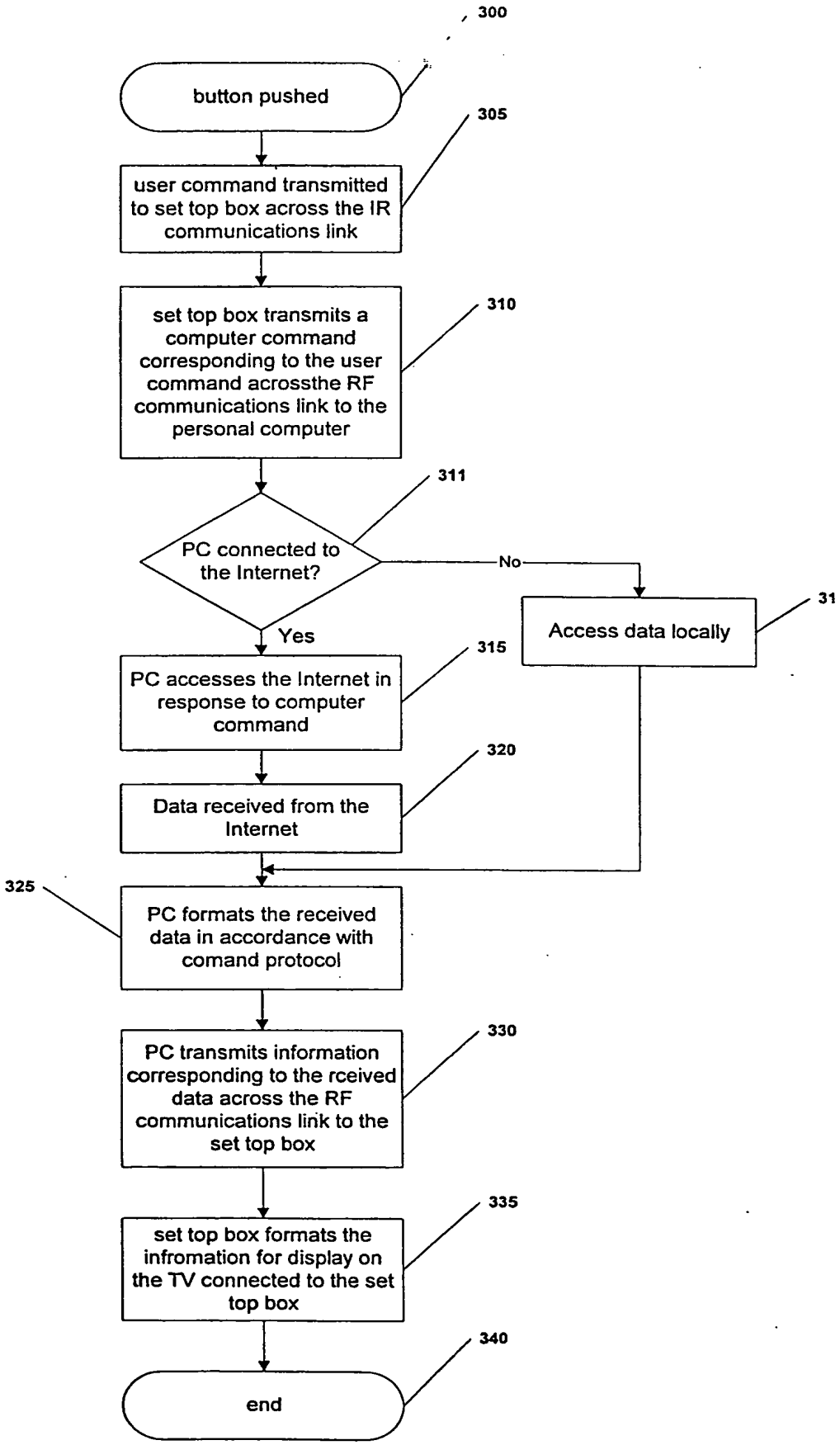

Figure 3

BNSDOCID: <WO___9935831A1_I_>

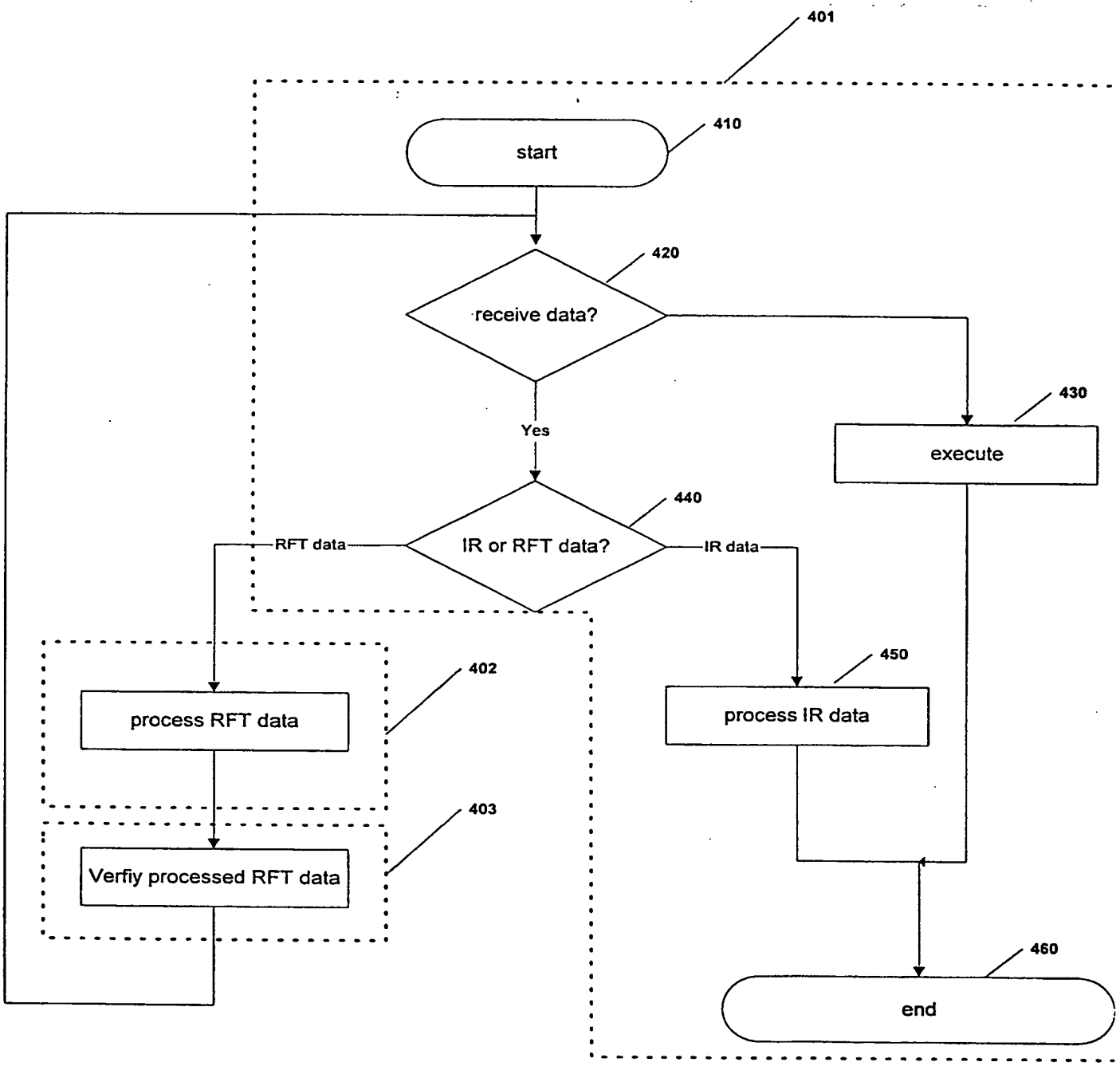

Figure 4A

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Packet format

START	ID	INSTR	LENGTH	[DATA]	CKSUM	STOP
BYTE	WORD	BYTE	WORD	n BYTES	WORD	BYTE

CKSUM = the least significant word of the sum of each BYTE contained in: INSTR, LENGTH, DATA
START = the start BYTE, usually 0xFF
STOP = the stop BYTE, usually 0xFF
ID = the least significant WORD of the TV BOX serial number
INSTR = the instruction or command to be executed
LENGTH = the length in BYTES of the following data stream
DATA = any data that may be required for the instruction

Figure 4B

BNSDOCID: <WO___9935831A1_I_>

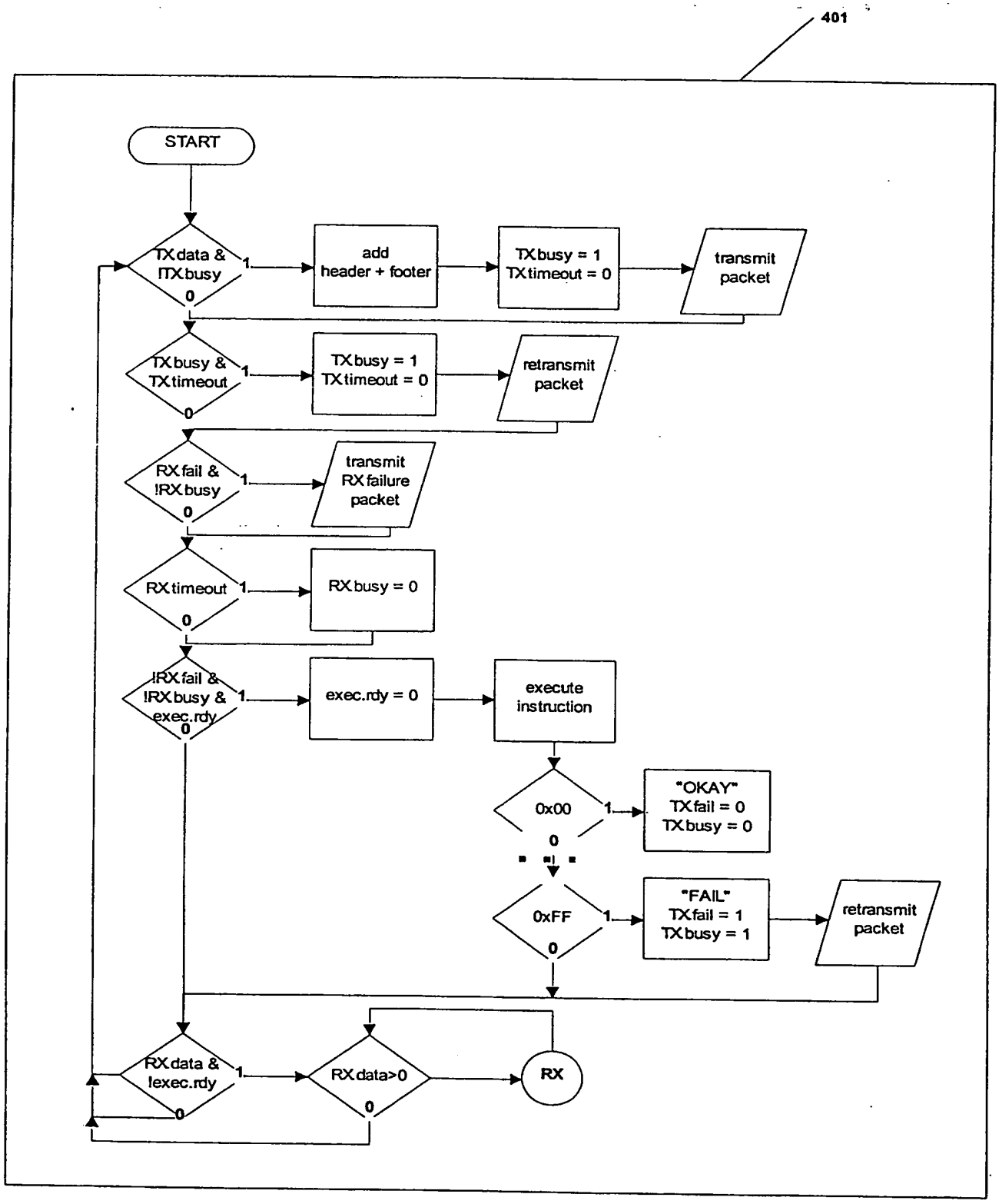

Figure 4C

BNSDOCID: <WO___9935831A1_I_>

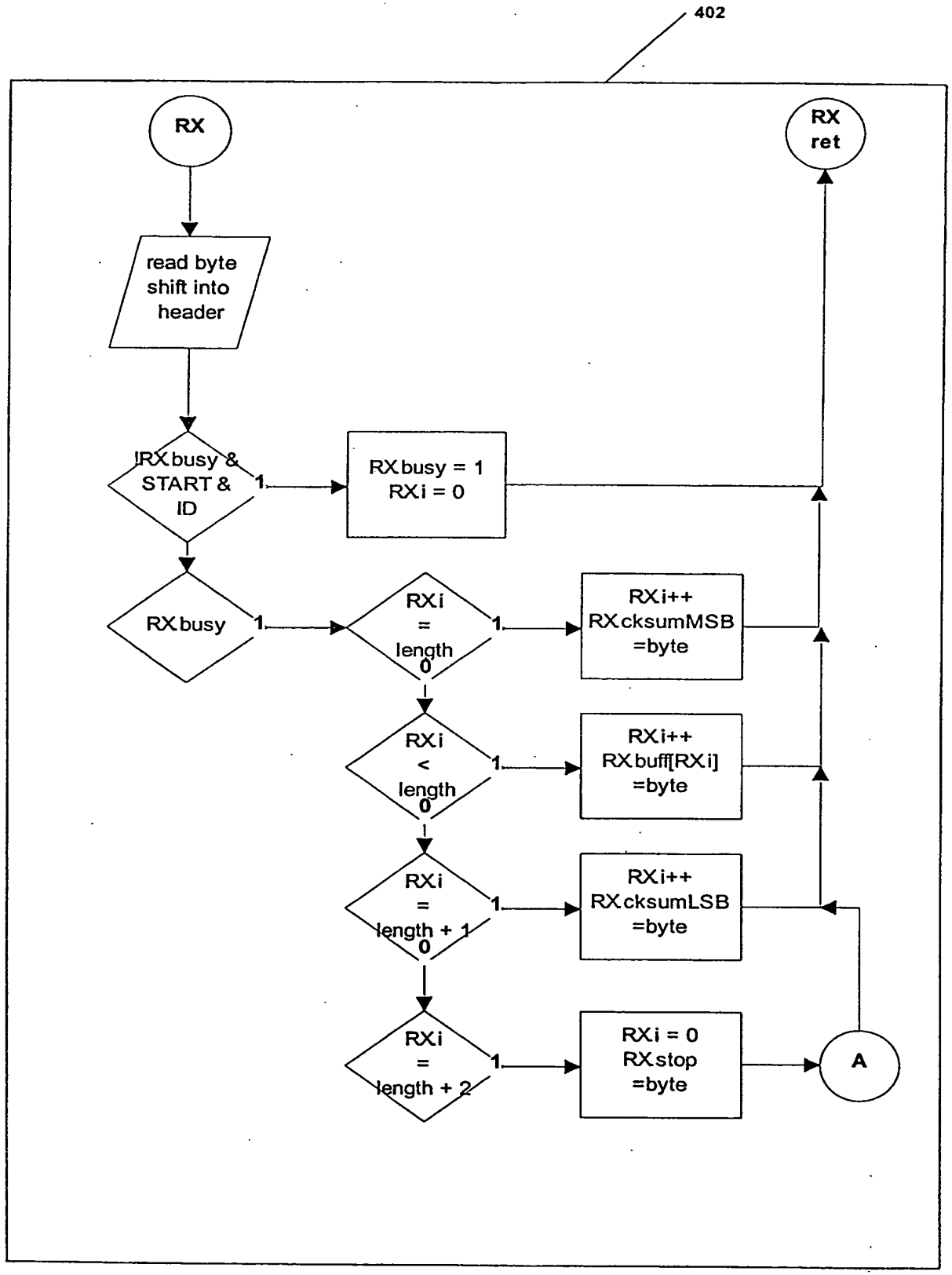

Figure 4D

BNSDOCID: <WO___9935831A1_I_>

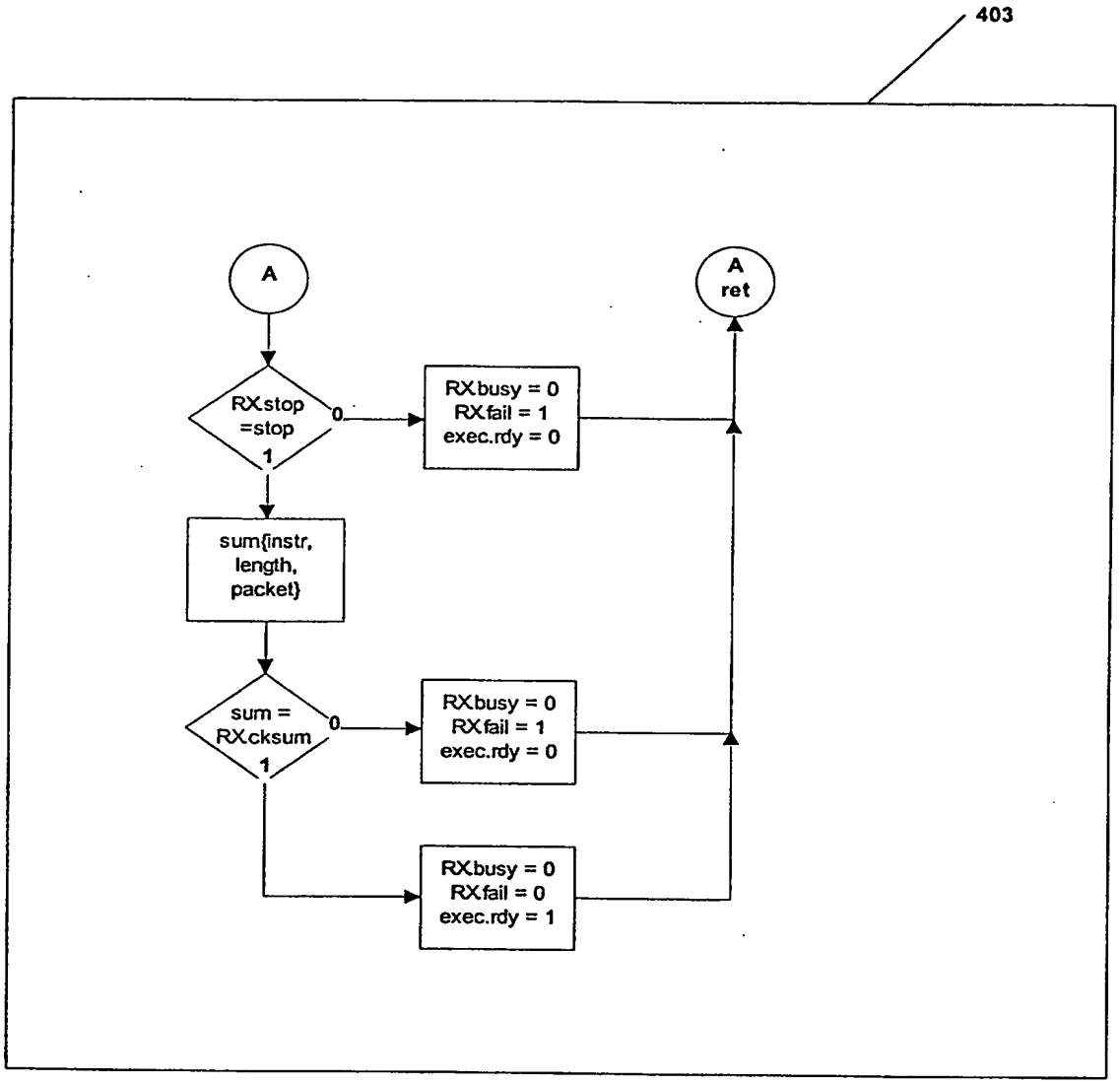

Figure 4E

BNSDOCID: <WO___9935831A1_I_>

INSTR	Instruction	Description	
0x01	WRITE_VSGREG	write directly to video register	drawing packets
0x02	DRAW_POINT	draw a point on the screen	
0x03	DRAW_HORIZ_LINE	draw a horizontal line	
0x04	DRAW_VERT_LINE	draw a vertical line	
0x05	DRAW_BOX	draw a box	
0x06	PAINT_BOX	fill in a box	
0x07	PAINT_PATTERN	fill in a box with a bitmap	
0x08	MOVE_BLOCK	copy a block	
0x09	LOAD_PALLETTE16	load a 16 (4 bit) color palette	
0x0A	LOAD_PALLETTE256	load a 256 (8 bit) color palette	
0x0B	BOX_STRING	draw a box with text	
0x0C	BOX_3DSTRING	draw a 3D box with text	
0x0D	SCROLL_UP	scroll text up	
0x0E	SCROLL_DOWN	scroll text down	
0x0F	GO_TO_XY	set cursor coordinates	
0x10	CLEAR_SCREEN	clear the screen	
0x11	CLEAR_SCROLL	clear scroll buffer	
0x12	PUT_CHAR	put a character onto the screen	
0x13	PUT_STRING	write text to the screen	
0x14	PRINTF	write text to the screen (standard C)	
0x15	LOAD_FONT	load a font directly to video memory	
0x16	VSG_INIT	initialize the video processor with default values	
0x17	VSG_WRITE	write directly to the video processor	
0x18	DRAW_3DBOX	draw a 3D box	
0x19	EXPAND_3DBOX	expand a 3D box, "pop up"	
0x65	FG_COLOR	set foreground color attribute	control packets
0x66	BG_COLOR	set background color attribute	
0x67	SHOW_TRANSPARENT	set transparency attribute (for PRINTF)	
0x68	XCHAR_SPACING	set character spacing in the horizontal direction	
0x69	YCHAR_SPACING	set character spacing in the vertical direction	
0x6A	CURSOR_X	set cursor X coordinate	
0x6B	CURSOR_Y	set cursor Y coordinate	
0x6C	XCURSOR_LEFT	set auto-text boundary for upper left (for PRINTF)	
0x6D	YCURSOR_TOP	set auto-text boundary for upper left (for PRINTF)	
0x6E	XCURSOR_RIGHT	set auto-text boundary for lower right (for PRINTF)	
0x6F	YCURSOR_BOTTOM	set auto-text boundary for lower right (for PRINTF)	
0x70	TIMEOUT1_MAX	set time-out for resending a packet	
0x71	TIMEOUT2_MAX	set time-out for disturbances in receiving data stream	
0x72	KEY_NO_REPEAT_FLAG	set keyboard repeat	
0x00	OK	packet was received OK	status packets
0xFF	NOT_OK	packet FAIL	
0xFE	KEYSTROKE	send a keystroke	
0xFD	ABORT_PACKETS	abort sent (usually clear all buffers and go to menu)	
0xFC	FINISHED_OPERATION	last packet, all done for now	
0xFB	DIAGNOSTICS	various sub-functions here for diagnosis, etc	
0xFA	MACRO	various sub-functions for doing other operation, or if instruction set is completely full	

Figure 5

BNSDOCID: <WO___9935831A1_I_>

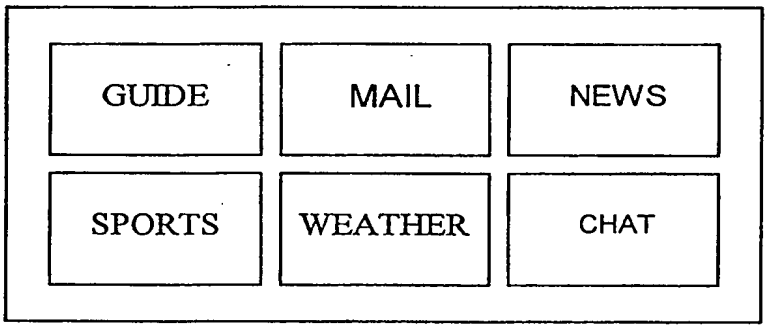

FIGURE 6

Thu	8:00P	8:30P	9:00P
ABC	High Incident		Murder One
CBS	Diagnosis Murder		Maloney
NBC	Friends	Single Guy	Seinfeld
FOX	<< Major League Baseball Playoffs NLCS Game 7 >>		
SCFI	**Star Trek V: The Final Frontier (Sci Fi ***)** >>		
HBO	**<< French Kiss (Com **)**		**The Net (Sus**)** >>
CNN	Prime News	Politics	Larry King Live >>
TBS	**<< Who's The Man (Com-Dra **)**		National Geographic
USA	Murder She Wrote		**Cape Fear >>**
TWC	Weather Scope	5-Day Planner	Michelin Driver's

CURRENT | FAVORITES | OPTIONS **Th 10/10 8:04PM**

FIGURE 7

BNSDOCID: <WO___9935831A1_I_>

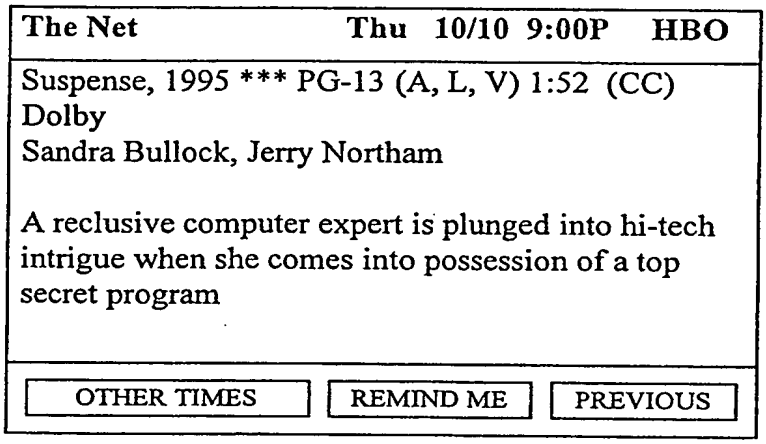

FIGURE 8

BNSDOCID: <WO___9935831A1_I_>

The Net Suspense, 1995 *** PG-13
Saturday 10/19 9:00P HBO
Sunday 10/20 8:00P HBO
Tuesday 10/22 11:00P HBO
Wednesday 10/23 8:00P Max
Friday 10/25 7:00P HBO
Saturday 10/26 9:00P Max
Sunday 10/27 11:00P Max

REMIND ME | PREVIOUS | CLOSE

FIGURE 9

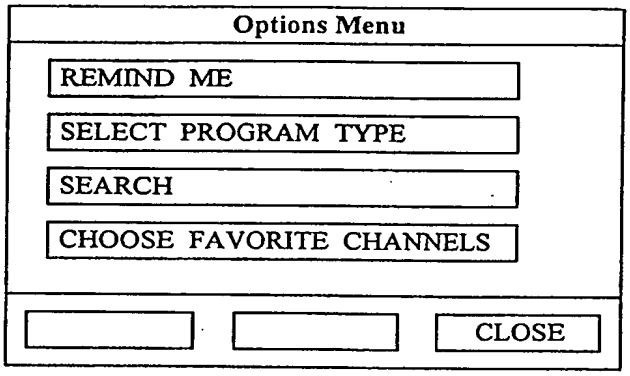

FIGURE 10

BNSDOCID: <WO___9935831A1_I_>

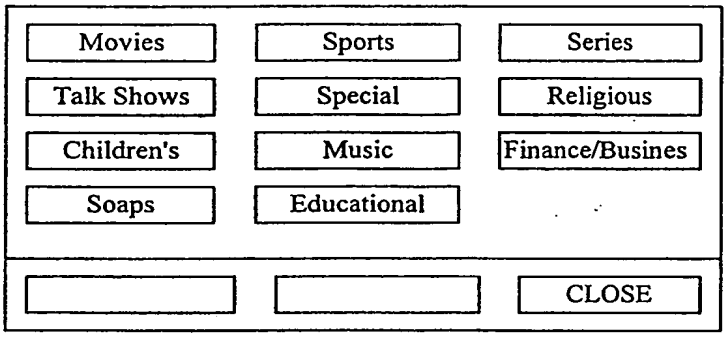

FIGURE 11

BNSDOCID: <WO___9935831A1_I_>

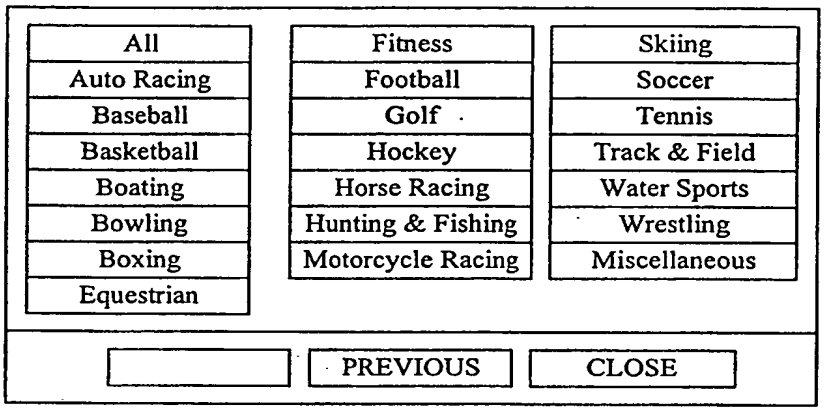

FIGURE 12

BNSDOCID: <WO___9935831A1_I_>

Sports	Football		
1:00P	Sat	ABC	College Football FSU at NC State
1:00P	Sun	NBC	San Diego Chargers at Miami Dolphins
1:00P	Sun	FOX	Dallas Cowboys at Washington Red
3:00P	Sun	FOX	Minnesota Vikings at San Francisco
3:00P	Sun	TNT	Indianapolis Colts at Buffalo Bills
9:00P	Mon	ABC	Kansas City Chiefs at Houston Oilers

REMIND ME PREVIOUS CLOSE

FIGURE 13

BNSDOCID: <WO___9935831A1_I_>

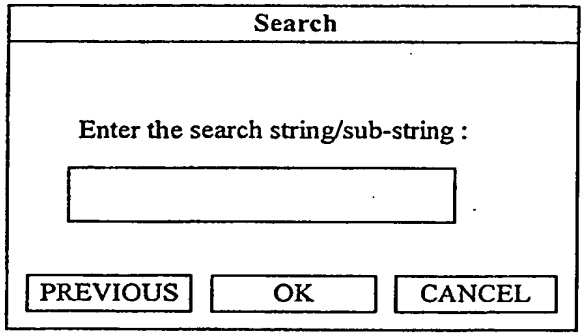
Search
Enter the search string/sub-string :
PREVIOUS
OK
CANCEL

FIGURE 14

Search Results for : Net
The Net (Sus ★★) Saturday 10/19 9:00P HBO
NBA: NJ Nets at Chicago Bulls Sunday 10/19 2:00P NBC
Internet Café Sunday 10/19 4:00P MTV
The Net (Sus ★★) Sunday 10/20 8:00P HBO
Internet Cafe Tuesday 10/22 2:00A MTV
The Net (Sus ★★) Wednesday 10/23 8:00P Max
REMIND ME PREVIOUS CLOSE

FIGURE 15

BNSDOCID: <WO___9935831A1_I_>

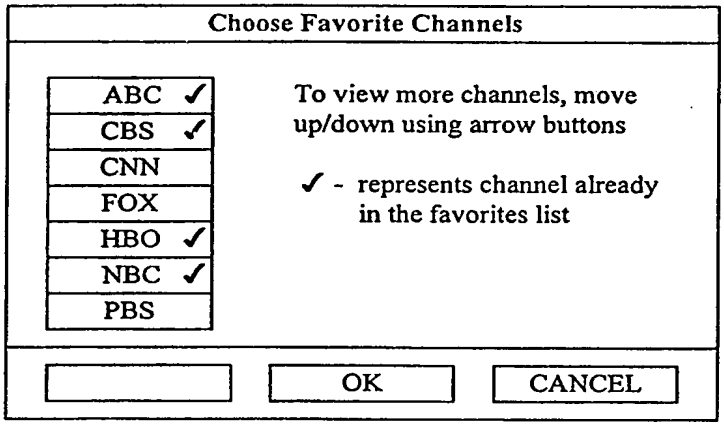

FIGURE 16

BNSDOCID: <WO___9935831A1_I_>

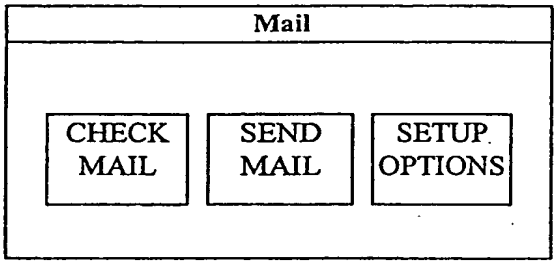

FIGURE 17

No.	Date	From	Subject
1			
2			
3			

REPLY FORWARD GO BACK

FIGURE 18

BNSDOCID: <WO___9935831A1_I_>

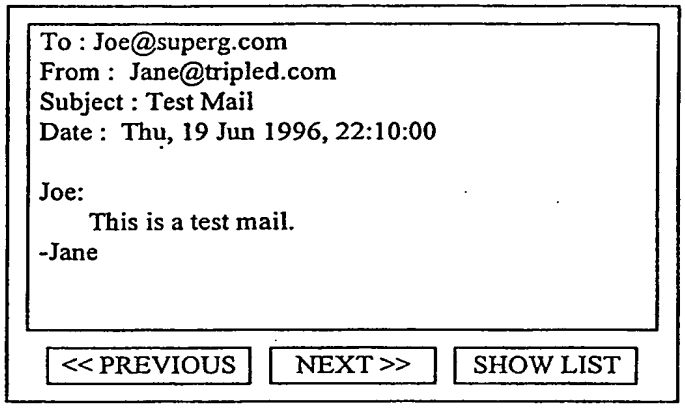
To : Joe@superg.com
From : Jane@tripled.com
Subject : Test Mail
Date : Thu, 19 Jun 1996, 22:10:00
Joe:
This is a test mail.
-Jane
<< PREVIOUS
NEXT >>
SHOW LIST

FIGURE 19

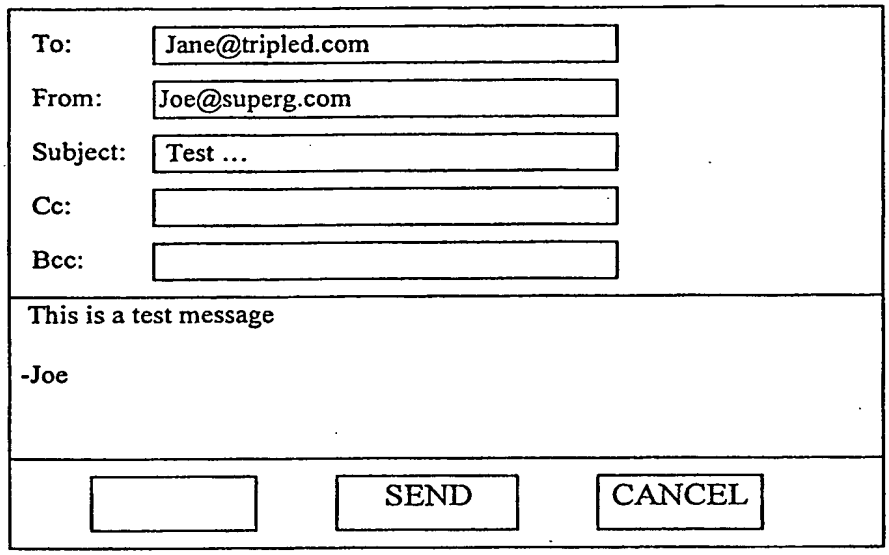
To:
Jane@tripled.com
From:
Joe@superg.com
Subject:
Test ...
Cc:
Bcc:
This is a test message
-Joe
SEND
CANCEL

FIGURE 20

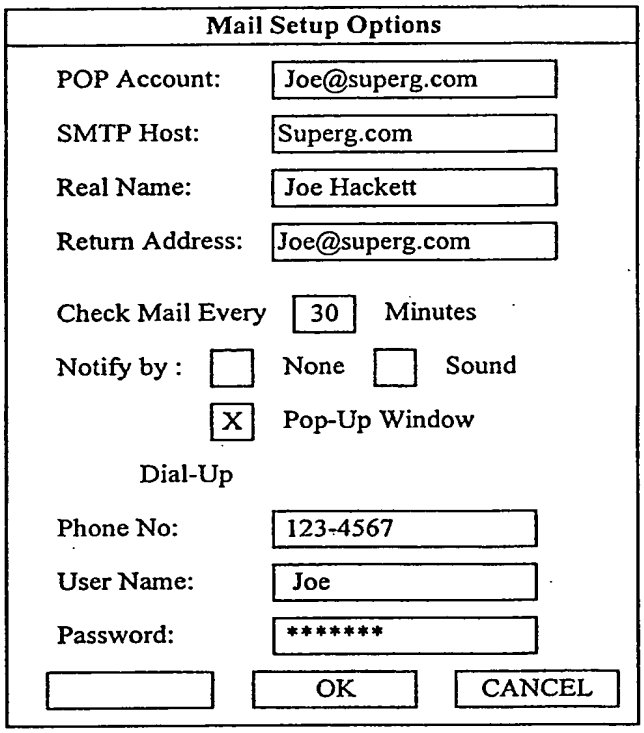

FIGURE 21

BNSDOCID: <WO___9935831A1_I_>

Category	Headline
General	Baptists to Boycott Disney
Politics	Tobacco Talks in Crisis
World	Saudi Bomb Suspect Charged
SETUP OPTIONS	MAIL CLOSE

FIGURE 22

BNSDOCID: <WO___9935831A1_I_>

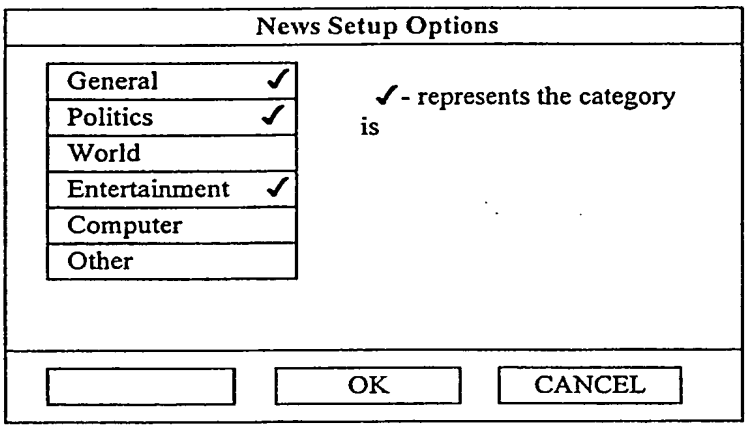
News Setup Options
General ✓
Politics ✓
World
Entertainment ✓
Computer
Other
✓ - represents the category is
OK
CANCEL

FIGURE 23

Sport	Headline
Basketball	Bulls win NBA championship
Baseball	Rangers Defeat Mariners
Football	Seahawks to get a new stadium

MAIL SETUP OPTIONS

FIGURE 24

BNSDOCID: <WO___9935831A1_I_>

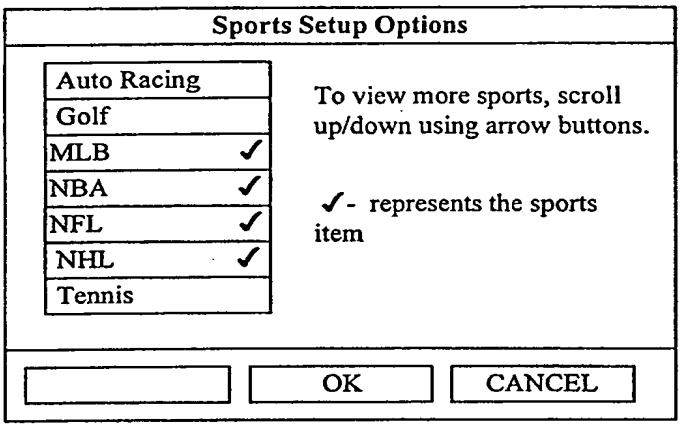
Sports Setup Options
Auto Racing
Golf
MLB ✓
NBA ✓
NFL ✓
NHL ✓
Tennis
To view more sports, scroll up/down using arrow buttons.
✓- represents the sports item
OK
CANCEL

FIGURE 25

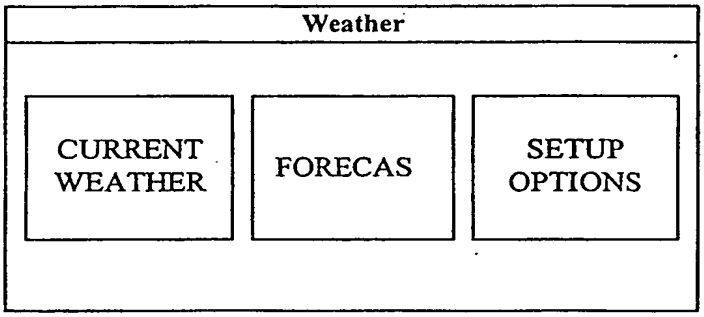

FIGURE 26

BNSDOCID: <WO___9935831A1_I_>

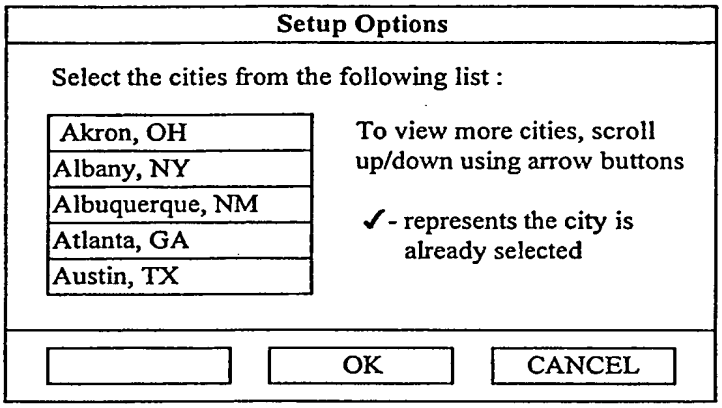
Setup Options
Select the cities from the following list :
Akron, OH
Albany, NY
Albuquerque, NM
Atlanta, GA
Austin, TX
To view more cities, scroll up/down using arrow buttons
✓- represents the city is already selected
OK
CANCEL

FIGURE 27

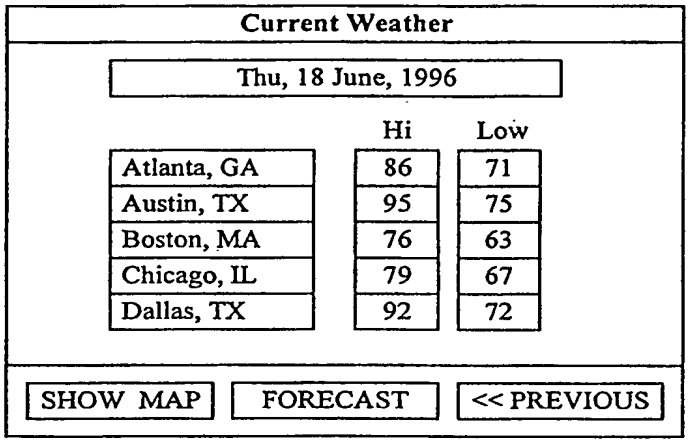

FIGURE 28

BNSDOCID: <WO___9935831A1_I_>

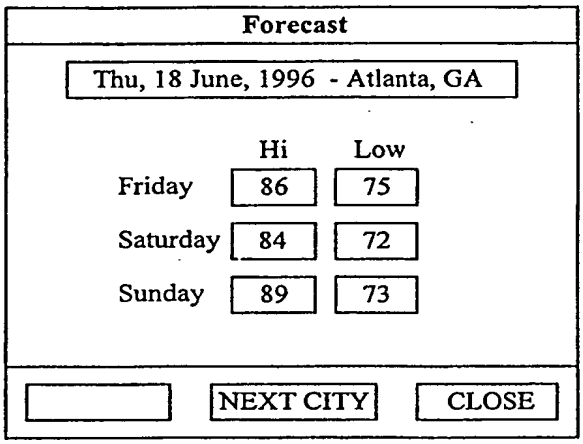
Forecast
Thu, 18 June, 1996 - Atlanta, GA
Hi
Low
Friday
86
75
Saturday
84
72
Sunday
89
73
NEXT CITY
CLOSE

FIGURE 29

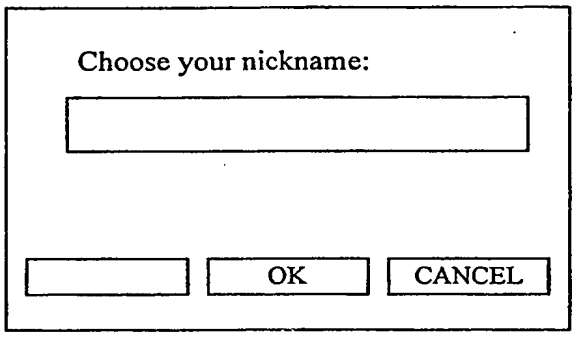

FIGURE 30

BNSDOCID: <WO___9935831A1_I_>

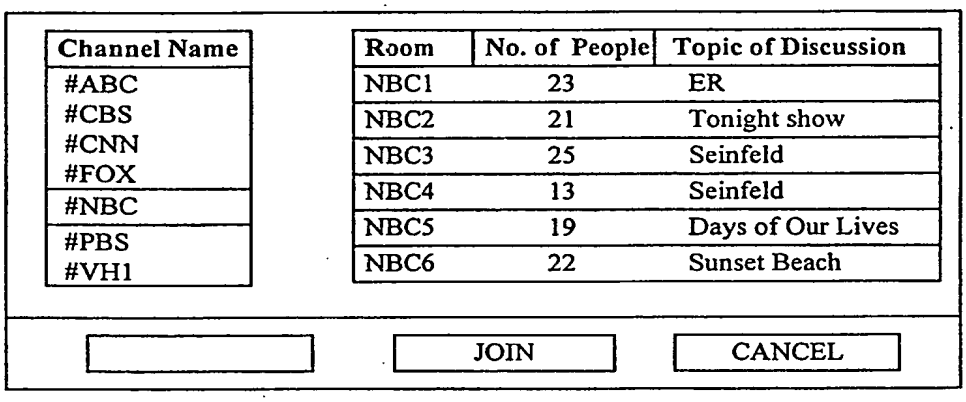

FIGURE 31

BNSDOCID: <WO___9935831A1_I_>

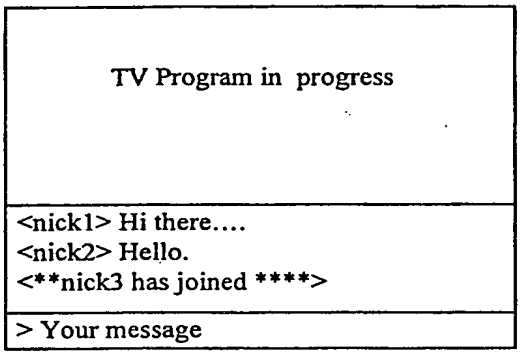

FIGURE 32

BNSDOCID: <WO___9935831A1_I_>

INTERNATIONAL SEARCH REPORT

Int. tional Application No
PCT/US 99/00461

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N5/445

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 97 49242 A (HUNWICH KEITH ;SCHEIN STEVEN (US); ALBA THERESA (US); FOLKER DAVID) 24 December 1997 see page 5, line 9 - line 15	1-4,6-8, 12
Y	see page 10, line 5-17	9-11
A	see page 14, line 28 - page 17, line 2 see page 9, line 31 - line 37	21
X	WO 97 48230 A (STARSIGHT TELECAST INC) 18 December 1997	1-4,6-8, 12
Y	see figures 1,3,4,7	9-11
Y	WO 96 17473 A (TV GUIDE ON SCREEN) 6 June 1996 see page 13, line 22 - page 14, line 15	9-11

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
22 April 1999	28/04/1999

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Yvonnet, J

1

Form PCT/ISA/210 (second sheet) (July 1992)

BNSDOCID: <WO___9935831A1_I_>

INTERNATIONAL SEARCH REPORT

Int. ..tional Application No
PCT/US 99/00461

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication,where appropriate, of the relevant passages	Relevant to claim No.
P,X	WO 98 03012 A (SCHULTHEISS CHRISTOPHER J ;BROWN DOUGLAS G (US)) 22 January 1998 see the whole document	1-4,6-8, 12
A	WO 97 48228 A (STARSIGHT TELECAST INC) 18 December 1997 see page 4, line 34 - page 5, line 17	5,21

1

BNSDOCID: <WO___9935831A1_I_>

INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. ational Application No
PCT/US 99/00461

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9749242 A	24-12-1997	AU 3223097 A	07-01-1998
WO 9748230 A	18-12-1997	AU 3294997 A	07-01-1998
WO 9617473 A	06-06-1996	US 5629733 A	13-05-1997
		AU 700527 B	07-01-1999
		AU 4502296 A	19-06-1996
		BR 9509826 A	30-09-1997
		CA 2204765 A	06-06-1996
		EP 0806112 A	12-11-1997
		JP 10510120 T	29-09-1998
WO 9803012 A	22-01-1998	AU 3726197 A	09-02-1998
WO 9748228 A	18-12-1997	US 5801787 A	01-09-1998
		AU 3310097 A	07-01-1998
		EP 0908049 A	14-04-1999

BNSDOCID: <WO___9935831A1_I_>

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